

REMARKS/ARGUMENTS***The Pending Claims***

Claims 1-17, 69, 70, 78 and 79 are pending currently and are directed to a composition comprising particulate tricalcium phosphate (TCP), wherein the particulate TCP can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm. Reconsideration of the pending claims is respectfully requested.

The Amendments to the Claims

Claim 1 has been amended to incorporate a feature of previously presented claim 70. Specifically, claim 1 has been amended to recite that the particulate TCP can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm. Claim 4 has been amended to recite that the particulate TCP comprises α -TCP. Claims 69 and 70 have been amended to further recite that the particulate TCP can be densified to form a TCP article having a minimum dimension of about 0.5 cm or greater and that the article is able to transmit about 70% or more light having a wavelength in the range of about 150 nm to about 1,000 nm. Claims 71-77 have been canceled. New claims 78 and 79 have been added and are directed to embodiments wherein the particulate TCP comprises β -TCP and can be densified to form an article having a minimum dimension of about 0.5 cm or greater and having a density that is 90% of the theoretical density or greater. These amendments are supported by the specification at, e.g., pages 10-11, paragraph [0038], page 13, paragraphs [0045] and [0047], and page 14, paragraph [0048]. No new matter has been added by way of these amendments.

Summary of the Examiner Interview

Applicants thank Examiner Soroush for the courtesy extended to the undersigned attorney on December 11, 2008 in granting a telephonic interview. The obviousness rejection of claim 76 was discussed.

Summary of the Office Action

Claims 1-7, 12-14, 17 and 69-73 stand rejected under 35 U.S.C. § 103(a) as obvious over Kawamura et al. (i.e., U.S. Patent 4,717,556) in view of Tanaka et al. (i.e., U.S. Patent 6,441,073). Claims 8-11 stand rejected under 35 U.S.C. § 103(a) as obvious over Kawamura et al., Tanaka et al., and Kijima et al. (i.e., U.S. Patent 5,185,177). Claims 15 and 16 stand rejected under 35 U.S.C. § 103(a) as obvious over Kawamura et al., Tanaka et al., and Dalal et al. (i.e., U.S. Patent 6,949,251). Claims 74-77 stand rejected under 35 U.S.C. § 103(a) as obvious over Kawamura et al. in view of Tanaka et al. and Sumita (i.e., U.S. Patent 5,137,534).

The Obviousness Rejections

The obviousness rejections are respectfully traversed and are further moot in view of the amendments to the claims.

Claim 1 as amended is directed to a composition comprising particulate tricalcium phosphate (TCP) having an average particle size of about 5 μm or less, an average crystal size of about 250 nm or less and a surface area of about $20 \text{ m}^2/\text{g}$ or greater, wherein the particulate apatite can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm (as recited in previously presented claim 70). Kawamura et al. taken alone or in combination with Tanaka et al., Dalal et al., Kijima et al., and/or Sumita fails to teach or suggest particulate TCP that can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm. Because the cited references do not disclose or suggest the claim elements, they do not render claims 1-17 and 69-77 obvious.

Kawamura et al. discloses microfine β -TCP powder which can be sintered to form a bioceramic. Nothing in Kawamura et al. teaches or suggests that such the β -TCP material can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm as recited in the pending claims. Moreover, one of ordinary skill

in the art would not expect to be able to produce a light transmissive densified article following the teachings of Kawamura et al. because chemico-mechanical processes such as that described in Kawamura et al. are known to produce TCP materials containing impurities which would preclude formation of a light transmissive material.

During synthesis of TCP, various impurities can be formed including calcium hydrogen phosphate (monetite), octacalcium phosphate, monocalcium phosphate monohydrate, amorphous calcium phosphate, apatitic tricalcium phosphate and hydroxyapatite as well as phase impurities resulting from the presence of α -TCP in β -TCP, or the presence of β -TCP in α -TCP. In particular, TCP produced via a chemico-mechanical process, such as an attrition mill process as described in Kawamura et al., can contain significant impurities due to the sensitivity of the process to the size and amount of media used for attrition, the size of the container, the speed of the mill, and the like. In addition, TCP made by a chemico-mechanical process can contain further impurities derived from the milling media (e.g., metal oxides). The presence of impurities can affect the microstructure of the ceramic and cause significant flaw sizes that prevent particulate TCP from being able to be densified to form an article that is permeable to light. As described in the specification, Applicants have discovered that particulate TCP can be obtained having the particle size, average crystal size, and surface area recited in the pending claims, which further has sufficient purity so as to be capable of being densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm as recited in the pending claims. Such a material is not taught or suggested by Kawamura et al.

Tanaka et al., Kijima et al., Dalal et al. and Sumita each fail to cure the deficiencies of Kawamura et al. None of these references teach or suggest, *inter alia*, a tricalcium phosphate powder that can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm as recited in the pending claims. Thus, even if one of ordinary skill in the art were motivated to combine the teachings of Kawamura et al. with Tanaka et al., Dalal et al., Kijima et al., and/or Sumita, which they would not be, such combination would not provide a composition comprising particulate TCP having the particle size, crystal size, and surface area recited in the pending claims, wherein the particulate TCP

can be densified to form an article having a minimum dimension of about 0.5 cm or greater that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm as recited in the pending claims. Accordingly, the claims are not obvious and Applicants respectfully request the rejection be withdrawn.

Conclusion

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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